

REMARKS

Currently, claims 1-7, 9-17, 19, 21-40 and 42-102 are pending in the application, including independent claims 1, 33, 101 and 102. Claims 21-32 and 47-100 have been withdrawn from consideration. Applicants respectfully request reconsideration and allowance in view of the following remarks.

Independent claims 1, 33, 101 and 102 are all directed to an endeffector for handling semiconductor wafers. More specifically, for instance, claim 1 is directed to an endeffector comprising a base member, a plurality of support members, a pushing device, a biasing member, a pneumatic actuator and a suction device.

In the Office Action, claims 1-7, 9-17 and 19 were rejected under 35 U.S.C. §103(a) as being unpatentable over Bacchi et al. (US Patent No. 6,256,555) in view of either Kurokawa (US Patent Application Publication No. 2003/0102682) or Mori et al. (US Patent No. 5,191,218). Bacchi et al. is directed to robot arm endeffectors for transferring semiconductor wafers having diameters greater than 150 mm between a wafer cassette and a processing station. The endeffectors of Bacchi et al. include proximal and distal rest pads having pad and backstop portions that support and grip the wafer within an annular exclusion zone that extends inward from the peripheral edge of the wafer. See Abstract. Additionally, Bacchi et al. teaches the use of a spring to extend an active contact point and vacuum pressure to retract the active contact point. More specifically, Bacchi et al. teaches that the spring 155 presses against the face of the piston 152 to extend active contact point 150 to the wafer gripping position, whereas the vacuum pressure acts through vacuum chamber 160 against the face of the piston 152 to overcome the spring force and retract the active contact point 150 to the wafer releasing position. See, e.g., col. 9, ll. 11-27. In stark contrast with the configuration of Bacchi et al., claim 1 of the present application teaches a biasing member or spring which biases the piston to remain in a retracted position. See, e.g., page 3, lines 14-16. See also, e.g., page 13, lines 21-24. In the present application and in claim 1, the force to extend the piston from a retracted position is provided by the pneumatic actuator, and not the spring, as is

the case in the cited reference of Bacchi et al. As such, Applicants respectfully submit that Bacchi et al. actually teaches away from the present invention by providing a vacuum pressure which is designed to retract the piston and a spring which is designed to extend the piston. In great disparity, the present application teaches the biasing member, e.g., a spring, for retracting the piston and the pneumatic actuator for extending the piston. Applicants respectfully submit that it is improper to simply pick and choose (or dismantle) just those components needed from a prior art reference to combine in a Section 103 combination. Moreover, Applicants note that a “prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention.” M.P.E.P. 8th Ed., Rev. 2, §2141.02, citing *W.L. Gore & Associates v Garlock, Inc.*, 721 F.2d 1540 (Fed. Cir. 1983).

Applicants respectfully submit that neither Kurokawa nor Mori et al. cure the deficiencies of Bacchi et al. for failing to teach a biasing member, e.g., a spring, which biases a piston towards a retracted position or a pneumatic member which moves a piston from a retracted position to an extended position. Applicants note that in order to establish *prima facie* obviousness, all of the claimed limitations must be taught or suggested in the prior art. See, e.g., MPEP § 2143.03.

Furthermore, regarding the Examiner’s citation with respect to the suction device of claim 1 in the present application, Applicants respectfully submit that it would not have been obvious to one of ordinary skill in the art to employ the suction devices of Kurokawa and Mori et al. for use in Bacchi et al. For instance, Kurokawa is directed to a suction holding device for sucking and holding an object such as a wafer or other thin plate material. Additionally, Mori et al. is directed to a suction device for holding a semiconductor wafer. However, the suction device of the present application is configured to capture any particles that are released during movement of the piston and to prevent the particles from being emitted beyond the contact head, i.e. onto the wafer. See, e.g., pg. 14, ll. 3-18. Specifically, the suction device of the present application is positioned adjacent the pneumatic actuator and away from the contact head, and thus away

from the wafer so as to not draw particles onto the wafer via the suction forces. See, e.g., Figs. 6A, 6B. In contrast, the suction devices of Kurokawa and Mori et al. are intended to secure a wafer via the suction plane 28 of Kurokawa and the attracting surface 2 of Mori et al. Applicants respectfully submit that neither Kurokawa nor Mori et al. is directed to the **suction of particles** away from a wafer surface. Thus, even if Bacchi et al. were somehow modified in view of Kurokawa or Mori, various features and elements of claim 1 would still remain absent. Consequently, Applicants submit that claim 1 patentably defines over the above three references alone or in combination.

Also in the Office Action, claims 33-40, 42-46, 101 and 102 were rejected under 35 U.S.C. §103(a) as being unpatentable over Bacchi et al. in view of Siniaguine et al. (US Patent No. 6,095,582). Regarding independent claims 33, 101 and 102, Applicants respectfully submit that Siniaguine, et al. does not cure the deficiencies of Bacchi et al. by failing to provide a biasing member for retracting a piston and a pneumatic actuator for extending a piston. Therefore, even when in combination, the cited references of Bacchi et al. and Siniaguine et al. do not teach each and every limitation of claims 33, 101 and 102.

Furthermore, regarding the Examiner's citation with respect to the emergency pins in claims 33 and 101, Applicants respectfully submit that Siniaguine et al. actually teaches away from the pins of the present application. For instance, Siniaguine et al. is directed to a wafer holder which comprises friction pins to impede the horizontal movement of a wafer and vertical locator pins to restrict the lateral movement of a wafer relative to the holder. The friction pins also prevent the wafer from bumping against the locator pins. More particularly, the height of the locator pins is greater than the height of the friction pins. However, Siniaguine et al. fails to teach the emergency pins of the currently amended claims 33 and 101. The emergency pins of the presently amended claims 33 and 101 do not contact the wafer when the wafer is supported upon the support members. Rather, the emergency pins are designed to contact and support the wafer when the wafer is not in its correct position or is bowing. In stark contrast, the friction pins 140 of Siniaguine et al. are designed

to contact the wafer on its horizontal bottom surface and act to impede the horizontal movement of the wafer and prevent the wafer from bumping against the vertical locator pins. See, e.g., col. 2, ll. 35-67. While Siniaguine et al. discloses that the vertical locator pins may or may not touch the wafer, Siniaguine et al. specifies the locator pins are of a greater height than the friction pins which support the bottom surface of the wafer. See col. 2, ll. 63-64. In great disparity, the emergency pins of claims 33 and 101 are at a height below the height of the support members.

In summary, Applicants submit that the presently pending claims are in complete condition for allowance and favorable action, therefore, is respectfully requested. Should any issues remain after consideration of this response, however, then Examiner Cole is invited and encouraged to telephone the undersigned at her convenience.

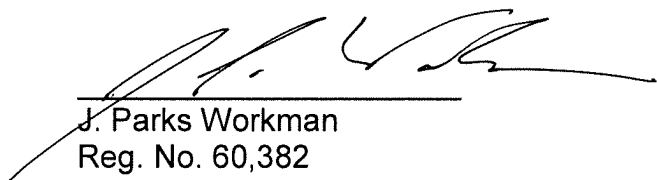
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Respectfully submitted,

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